PENDING CLAIMS

1. (Previously Presented) A method for manufacturing a semiconductor device, said method comprising:

forming a stopper film on a semiconductor substrate having a conductive layer therein;

forming an interlayer insulating film on said stopper film, said interlayer insulating film being a low dielectric constant material;

forming a capping film on said interlayer insulating film;

forming a resist film on said capping film, said resist film having a predetermined pattern;

etching said capping film and said interlayer insulating film using said resist film as a mask to form an opening reaching said stopper film;

with said resist film left in place, etching the portion of said stopper film exposed by said opening to form a via hole; and

after forming said via hole, removing said resist film by ashing in a mixture consisting of hydrogen and an inert gas that does not react with hydrogen.

2. (Previously Presented) The method as claimed in claim 1, further comprising:

forming a barrier metal film on an inner surface of said via hole; and

forming a copper layer on said barrier metal film such that said copper layer fills said via hole.

3. (Previously Presented) The method as claimed in claim 1, including ashing at a temperature of 200°C to 400°C, wherein the inert gas is selected from the group consisting of argon and helium.

4. (Previously Presented) The method as claimed in claim 3, wherein the volume percent of the hydrogen with respect to the inert gas is 1% to 40%.

5. (Previously Presented) The method as claimed in claim 4, wherein the inert gas is argon and the volume percent of the hydrogen with respect to the argon is 10% to 40%.

6. (Previously Presented) The method as claimed in claim 4, wherein the inert gas is helium and the volume percent of the hydrogen with respect to the helium is 1% to 30%.

7. (Previously Presented) The method as claimed in claim 1, wherein said conductive layer is a copper wiring layer.

8. (Previously Presented) The method as claimed in claim 1, wherein said interlayer insulating film is selected from the group consisting of a porous SiO_2 film, a porous SiOC film, and a porous spin on glass film.

9. (Previously Presented) The method as claimed in claim 1, wherein said stopper film is selected from the group consisting of an SiC film, an Si_xN_y film, an SiCN film, and an SiOC film.

10. (Previously Presented) The method as claimed in claim 1, wherein said capping film is one of an SiO_2 film and an Si_xN_y film.

11. (Previously Presented) The method as claimed in claim 2, including ashing at a temperature of 200°C to 400°C, wherein the inert gas is selected from the group consisting of argon and helium.

12. (Previously Presented) The method as claimed in claim 11, wherein the volume percent of the hydrogen with respect to the inert gas is 1% to 40%.

13. (Previously Presented) The method as claimed in claim 12, wherein the inert gas is argon and the volume percent of the hydrogen with respect to the argon is 10% to 40%.

14. (Previously Presented) The method as claimed in claim 12, wherein the inert gas is helium and the volume percent of the hydrogen with respect to the helium is 1% to 30%.

15. (Previously Presented) The method as claimed in claim 2, wherein said conductive layer is a copper wiring layer.

16. (Previously Presented) The method as claimed in claim 3, wherein said conductive layer is a copper wiring layer.

17. (Previously Presented) The method as claimed in claim 2, wherein said interlayer insulating film is selected from the group consisting of a porous SiO_2 film, a porous SiOC film, and a porous spin on glass film.

18. (Previously Presented) The method as claimed in claim 2, wherein said stopper film is selected from the group consisting of an SiC film, an Si_xN_y film, an SiCN film, and an SiOC film.

19. (Previously Presented) The method as claimed in claim 2, wherein said capping film is one of an SiO_2 film and an Si_xN_y film.